



ASSOCIATION OF IRAN RECYCLING INDUSTRIES

www.irfederation.ir
info@airi.ir

Association of Iran Recycling Industries

- ▶ Founded on June, 11th 2008, **AIRI** represents more than 250 private-sector recycling companies and enterprises of Iran, as the independent non-governmental organization to promote, enhance, and advocate recycling industries, towards circular economy and sustainable development.
- ▶ We serve as the “Voice of Recycling” and work our best to strengthen the connection and collaboration among the recycling industries by organizing meetings, panels and discussions to share the experiences and develop the ideas, in order to make our country and the planet a better place to live.
- ▶ Our goal is to provide technical, financial, and legislative support for our members, mostly by improving the policy frameworks of Iran Waste Management Act, as well as expanding our recycling markets globally.
- ▶ Together, our approach is “fair, effective, efficient and sustainable” and we are thinking about turning the waste as an environmental challenge to an economical opportunity.
- ▶ Now, we are proud to claim that Iran Waste Management Act is about to be improved to support recycling, private investment and sustainable development in 3 major topics:
 - Total tax exemption! From 5%-25% profit tax to ZERO tax for the recyclers.
 - Increasing the recycling cost of any product from 0.05% of to 0.1% of its price.
 - Creating a totally transparent marketplace for all the waste transactions.



Department of Chemicals & Petrochemicals Recycling

- ▶ 33 members of AIRI operate in this field.
- ▶ 20 companies refine waste lubricating oil, and 13 companies recycle different chemical and petrochemical wastes.

Mutual Cooperation Fields

- Hydrocarbon fuels production by refining acid sludges
- Hydrocarbon fuels production by catalytic-, hydro- and thermal- cracking of petroleum and petrochemical residues
- Industrial catalysts recycling
- Petrochemical EDC and DSO wastes management



Department of Polymers Recycling

- ▶ 26 members of AIRI operate in this field.
- ▶ 14 companies recycle plastics, and 12 companies recycle rubbers by different methods.

Mutual Cooperation Fields

- Improving recycled polymers quality by product uniformity, and IV and MFI stabilizing
- Producing compounds from recycled materials to reach higher value-added products
- Quality improvement and inbound-Sulphur reduction of pyrolysis oils



Department of Metals Recycling

- ▶ 64 members of AIRI operate in this field.
- ▶ 56 companies recycle ferrous metals, and 8 companies recycle non-ferrous metals.

Mutual Cooperation Fields

- Stabilizing and improving quality of recycled metal products by process mechanization
- Improving energy efficiency by smart energy solutions in metals recycling industries
- Extraction of heavy metals from industrial wastes and used catalysts
- Extraction of noble metals from electronic wastes



Department of Paper & Cellulose Wastes Recycling

- ▶ 20 members of AIRI operate in this field.
- ▶ 13 companies recycle paper, and 7 companies recycle other cellulose wastes.

Mutual Cooperation Fields

- Stabilizing and improving paper pulp quality
- Enhancing the energy efficiency and water conservation by applying the newest recycling technologies



Department of Food Wastes Recycling

- ▶ 14 members of AIRI operate in Digestion and Waste-to-Energy plants, as well as producing Compost, Biodiesel.

Mutual Cooperation Fields

- Increasing yield and quality of Biodiesels
- Improving compost quality
- Using bio-solution on agricultural wastes



Department of Dismantling

- ▶ 73 members of AIRI operate in this field.
- ▶ 64 companies dismantle vehicles, and 9 companies disassemble electronic wastes.

Mutual Cooperation Fields

- Using robotic systems for vehicles dismantling
- Using robotic systems for E-waste disassembling



Department of Engineering & Waste Management Services

- ▶ 17 members of AIRI operate in this field.
- ▶ 12 companies are machine and plants constructors and 5 companies are technology suppliers.

Mutual Cooperation Fields

- Integrated and innovative technologies to enhance energy, water and resource conservation
- Technical solutions to improve anaerobic digestion yield
- Supercritical wastewater treatment





ASSOCIATION OF
IRAN RECYCLING INDUSTRIES

WASTE MANAGEMENT AND RECYCLING IN IRAN
HOW IT WAS, WHAT WE HAVE DONE, AND HOW IT WILL BE
A WIN-WIN SITUATION!

Amin Sadrnejad
International Affairs Manager

www.irfederation.ir
info@airi.ir
Amin87Sadrnejad@gmail.com

For Me, It Was All Started in 2011...

- ▶ Seven years ago, as private investors, alongside a group of devoted people, I started my journey in recycling industries in order to make my country a better place to live in. However, after a while, we found almost everything against us...
- ▶ Neither legal and financial support, nor any sort of encouragement for the private investments... The atmosphere was CHAOTIC!
- ▶ After becoming a member of AIRI, alongside all other dedicated members, we were able to analyze the problems and find the best solutions.



Iran and The 7 Stages of Waste Management

► This was absolutely not OK...

Waste Management Hierarchy	Iran's Situation
Waste Prevention	×
Separation at Source	×
Collection	✓
Sorting, Process and Distribution	Trapped in Waste Dealers' Networks!
Recycling	Trapped in Legislative Vertigo!
Incineration and Waste to Energy	×
Waste Disposal	✓



The Root of All Evil

- ▶ 1/3 of the Iranian Government's income comes from selling this stinky black liquid!

“We are drowning in the devil's excrement!”
- Juan Pablo Perez Alfonso

THE OIL CURSE



Historical evidence in oil producing countries shows that rather than reducing poverty and inequality, oil has adverse **SOCIAL** and **ECONOMIC EFFECTS** and in many cases **FUELS CONFLICT**.



3 PROCESSES ARE PRIMARILY RESPONSIBLE FOR THIS “NATURAL RESOURCE CURSE”

- CORRUPTION**
Oil revenues raise the value of being in power and provide politicians with more resources to influence the outcome of elections leading to higher levels of corruption.
- DISRUPTION**
The price of oil fluctuates leading to unpredictable revenues and causing severe economic disruptions making long-term planning challenging.
- DEVALUATION**
Exporting oil causes the local currency to appreciate making other exporting sectors less competitive.



Who Needs Regeneration?

► The sad truth is...

Country	Population (Million)	GDP (Billion USD)	GDP per Capita (USD)	Annual GDP Growth Rate (%)	Annual MSW* Generation (kg per Capita)	Regeneration Rate (%)**	MSW Recycling Rate (%)	Incineration Rate (%)	Landfilling Rate (%)
							MSW Composting Rate (%)		
Germany	83	3,478	41,904	1.60%	627	66.1	48.1	32.5	1.5
							18		
Italy	60	1,859	30,983	1%	497	45.3	26.2	24.8	18
							19.1		
UK	65	2,651	40,785	1.70%	483	43.4	27.2	31.4	22.6
							16.2		
USA	325	18,624	57,305	2%	726	34.6	25.7	12.8	52.6
							8.9		
Spain	47	1,237	26,319	2%	443	29.7	18.2	13.6	56.7
							11.5		
Iran	81	419	5,173	4%	~290	~6	~1	0	94
							~5		



Regeneration: an Option, or a Necessity?

- ▶ Neither waste management, nor wastewater treatment network...
- ▶ Optimistically, Going on with the current trend of supply and demand, in the next 15-20 years, Iran's oil production would be only sufficient for meeting the domestic needs; and then, there won't be any excess oil to sell!
- ▶ Iranian authorities, air pollution, water stress, and the habit of taking actions right at its catastrophic point!
- ▶ It is not up to us to choose whether we regenerate or not... We have to regenerate in order to survive!

*The future
belongs to
those who
know how to
regenerate!*



All The Actors, Get Ready to **SUPPORT!**

- ▶ It is a socio-cultural process, which takes trust and communication bond among the actors.

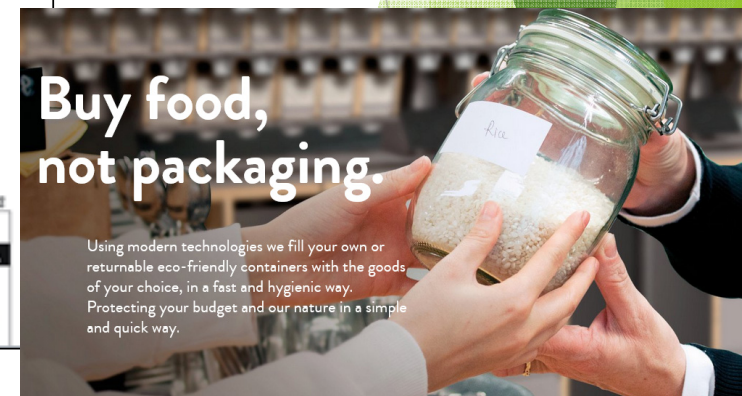
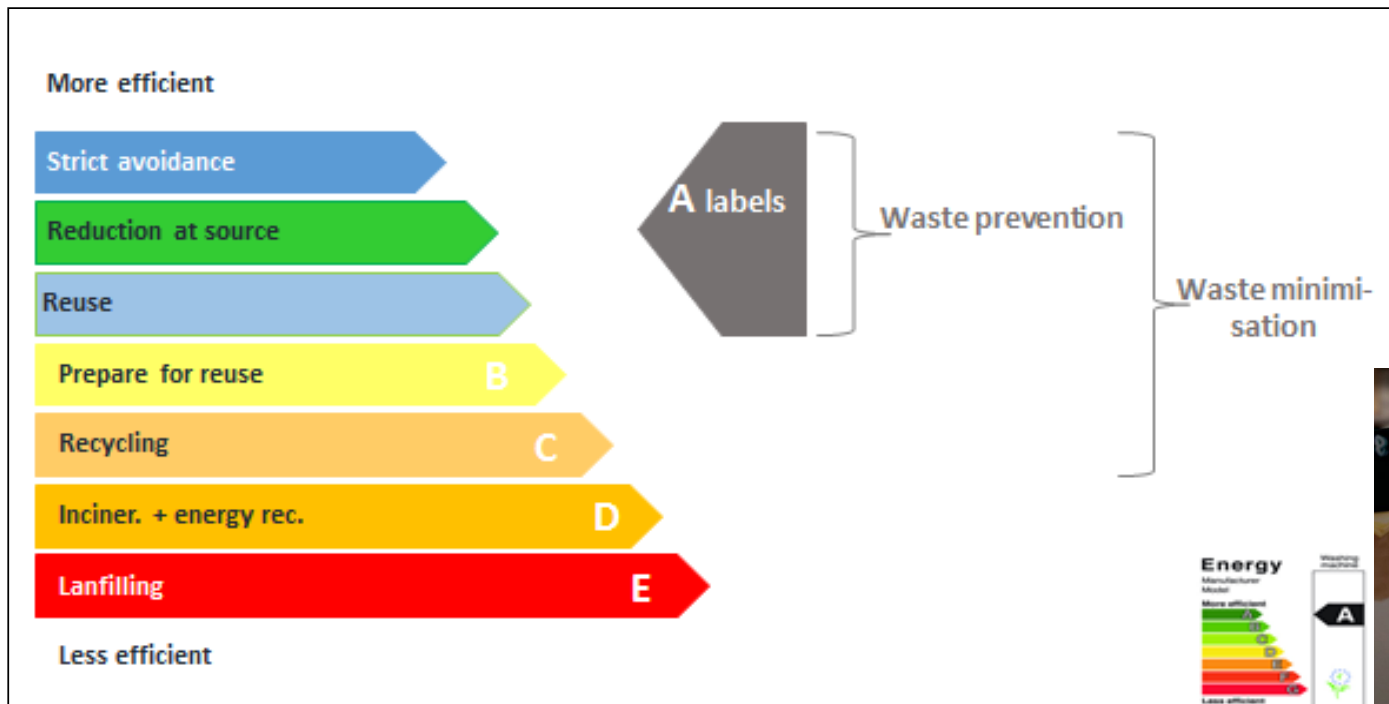
Public Sector (Central government, municipalities, authorities, state members, legislators, etc.)	Private Sector (Citizens, companies, enterprises, NGOs, etc.)
Interest of Leaders in Environment	Social Awareness
Authorities' Knowledge on SWM* Technologies and Good Practices	Social Responsibility and Feeling as a Part of the Society
Legal Support	Citizens Participation in Decision Makings
Financial Support	Presence of Recycling Companies in the Region
TRANSPARENCY	



“Waste Prevention? Never Heard of It...”

Problem...

- ▶ The most cost-effective way of dealing with the waste problem... Yet, with ZERO share in the contents of the education system and TV programs of Iran!



Wake Up! Time Is Running Out!

- ▶ We have to ask from the authorities:
 - *"Are you even interested in environment?"*, because their actions tell the otherwise...
 - Let's look at the SWM good practices and technologies, and LEARN FROM THEM!
 - Stop living in the past centuries, get ready for the modern life!

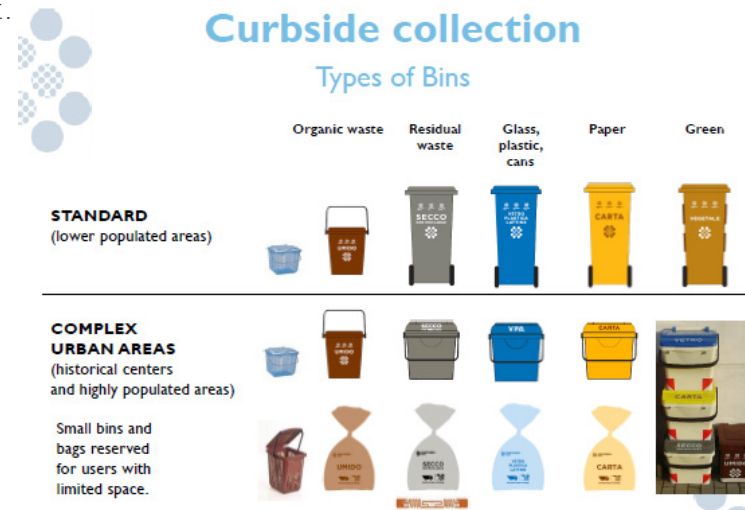
**Solutions:
Get Ready For
The Modern Life!**



Massive Costs of Separation at Source

- ▶ *“The cost to fill the cities with different color trash cans is MASSIVE! We don’t have the money...”*
- ▶ Let’s try to believe that environmental issues are among the priorities of our governments, while they have no money to invest in them...
- ▶ No educational program for waste prevention! No waste segregation in urban and rural areas! And suddenly colored trash cans and trash compactors???
- ▶ It’s all about SUPPORT over INFRASTRUCTURE.

Problem...



Support Over Infrastructure

- ▶ Without support, infrastructure means nothing...

City Parameter	Iran's Situation
Awareness Campaigns and Educational Programs	×
Interest of Leaders in Environment	?
Citizens Participation in Decision Makings	?
Authorities' knowledge on SWM* good practices	?
Authorities' knowledge on Technologies for SWM	?
Presence of Recycling Companies in the Region	✓
Equipment Available for Source Separation	×



Slow, But Steady

- ▶ Let's develop an educational programs in the media and schools.
- ▶ Define weekly schedules to collect particular wastes in neighborhoods, high-rise buildings, universities, and small towns.
- ▶ Any other low cost innovative and efficient solutions to start this cycle and gradually reach the ultimate point..
- ▶ No need to invest massively at the beginning!

Solution:
Going Step-by-Step!



3 Stages, 3 Policies... A Vertigo!

- ▶ A legislative vertigo among executives, legislators, and judiciaries...

Waste Management	Market Policy
Collection	Tax system which is working well...
Sorting, Process and Distribution	Monopolies of un-traceable waste dealers in Free market system!
Recycling	It was supposed to be EPR... But practically it isn't!

A Clear Policy Regime



Untraceable Waste Dealers

- ▶ As an example, the municipality of Tehran, auctions the waste collection of every municipal district as a package among some contractors annually, receives enormous earnings, and doesn't care about other consequences.
- ▶ Alongside these contractors, untraceable networks of dealers get into the game and take recycling to suburb areas of the city, slums, unknown storages and garages, with no sort of commitment towards the transparency, national standards and laws.
- ▶ Meanwhile, due to this dealers' network monopoly...
 - Domestic recyclers struggle with waste shortage, and work with one-fifth to one-tenth of their nominal capacity!
 - Sometimes the price of waste equals to the new product and importing waste from foreign countries becomes unbelievably cheaper!
 - In such environment, separated collection will just make things easier for the waste dealers, as they develop much stronger in front of recycling industries...

Problem...



Transparent Marketplace!

- ▶ Obliging both supplier and demander to deal and transact in a totally visible and transparent marketplace
- ▶ The byproduct of such platform is to discover the amount and composition of each kind of waste in all areas, from districts, towns, and cities to the whole country.
- ▶ Likewise, this database can be a cornerstone for further developments and optimizations, to benefit from this remarkable economic potential more efficiently.

Solution:
A Transparent Market!

About to be enacted!

- **A totally transparent marketplace for the waste transactions**



EPR or Why Recycling Needs Support

- ▶ Impossible to recycle 100% of primary products in reality, the 2nd law of Thermodynamics if you will!
- ▶ The primary producers are naturally bigger and stronger than the recyclers, and as long as the profit is due to produce and sell more, the primary producers are more willing to eliminate recyclers and increase their market share.
- ▶ In nearly all of the developed countries, recycling relies on the Extended Producer Responsibility regime...
 - Producing something un-recyclable is banned! At the point of production, there has to be a process for recycling as well.
 - The recycling cost is added to the price of a primary product and at the recycling stage, it is given to the recycler, directly or indirectly.
 - The recycler is being supported and the market stays competitive.

Problem...



Extended Producer Responsibility

- ▶ Iran waste management act – executive bylaw – 12th article (2005): recycling cost of ANY product [regardless of the material, recycling process and its environmental footprint], is 0.05% of its price!
- ▶ This amount was supposed to go to the Iran National Environment Fund (IRNEF) to be given to recyclers directly or as tax exemptions. However, because of some contradictions it has with Iran's constitution, after 13 years, it still has not been applied!!!
- ▶ Yet, supporting sustainable development industries is not a brand-new policy in Iran, since the government supports renewable energy suppliers by buying their clean power about 10 times higher than the average power price, which is funded by consumers' power bills.



**Solution:
Recycling Cost to the
Recyclers!**

About to be enacted!

- **ZERO tax for the recyclers!**
- **Increasing the recycling cost of any product from 0.05% of to 0.1% of its price (We know that recycling cost is a function of the recycling process and material of the waste, and it must be DYNAMIC! However, it still is an improvement comparing to what it was...)**



Incineration or... Authorities' Darling!

- ▶ Incineration, a golden opportunity to get rid of “rubbish and garbage” in a blink of eyes, no matter how many job opportunities and regeneration potentials get burned in it!
- ▶ Converting the waste to energy, even in cleanest furnaces that captures all the emissions and residues (from ashes to heavy metal sediments), is still an expensive way to supply energy from a fuel with different components which mostly have low heat values.
- ▶ Incinerations and landfills are the last two stages of waste management cycle, utilized when something is un-recyclable!

Problem...



Putting the Cart Before The Horse

- ▶ Starting waste management from incinerators, is putting the cart before the horse!
- ▶ Isn't it better to have a strategy to start waste management from its first stages, rather than the lasts?

**Solution:
Do The First
Things First!**



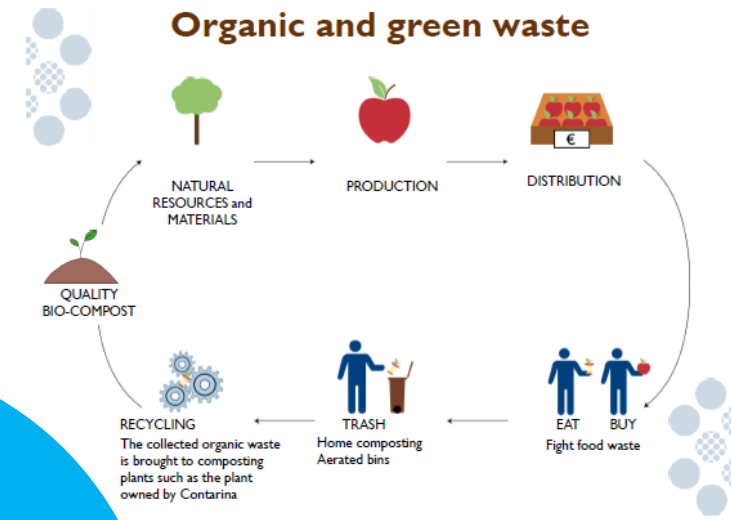
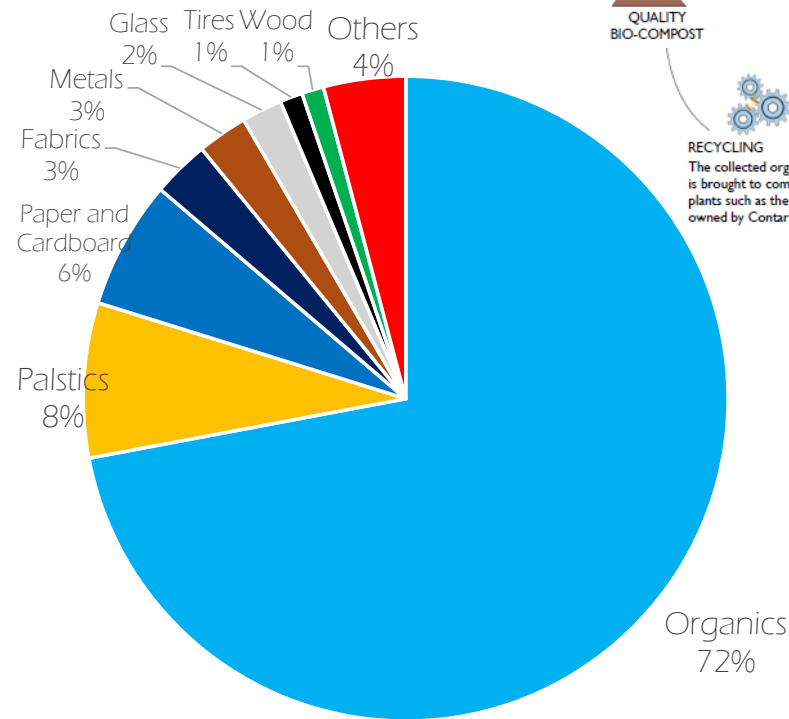
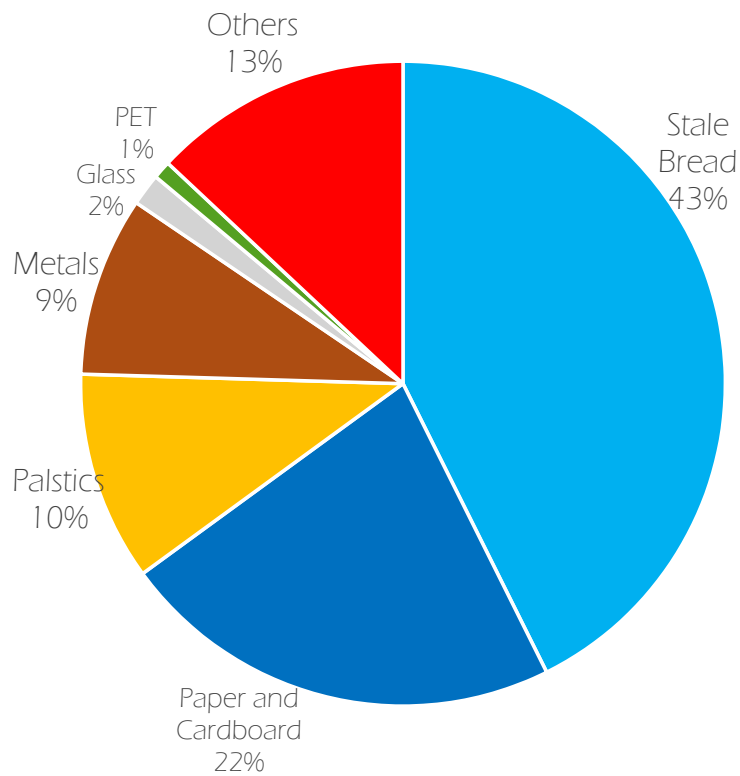
Undesirable in Italy, Yet Desirable in Iran?

- ▶ 20,000 people marching in Florence in opposition to incineration projects...



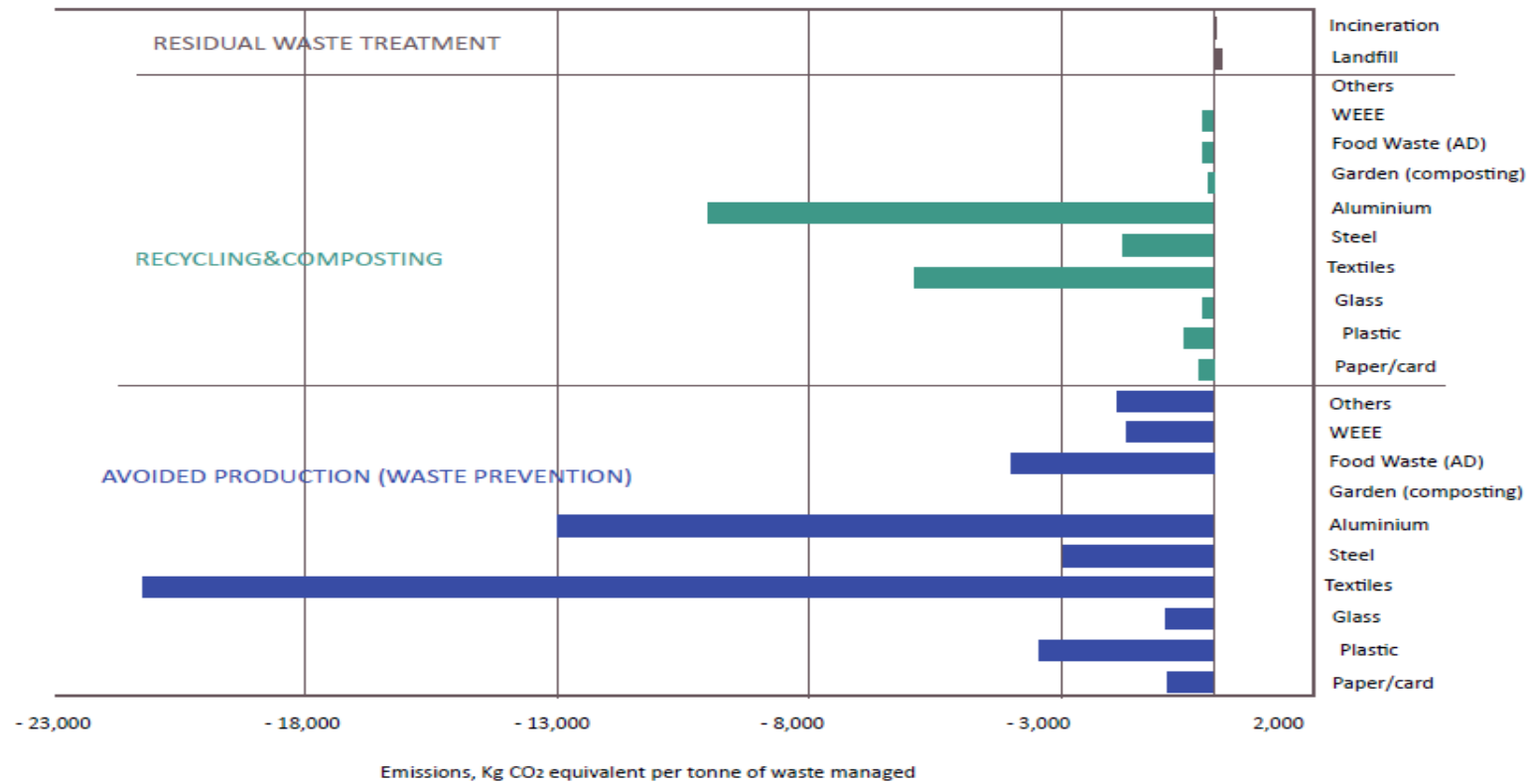
Waste Composition in Iran

► Organics have the biggest share.



Reduce, Regenerate, Recover!

► The environmental footprint says it all.



Recycling Prospect in Iran's Economy

- Create more than a million jobs, that resulting to a significant economic boost.

Recycling Process	Primary Product Cost (Million Dollars)	Annual Waste Generation (Tons per Year)	Value Added from Recycling (Million Dollars)	Employment Growth (Number of Jobs Created)	Environmental Footprint
Producing Compost and Organic Fertilizers via Food and Bio-Waste Recycling	2,857	13,000,000	220	10,000	Prevents More Than 85% of Soil Loss on Erosive Areas 3,400,000 tons of Carbon Sequestration Annually
Metal and Steel Regeneration via Ferrous Metal Recycling and Vehicle Dismantling	4,225	6,500,000	2,958	370,000	90% Energy Saving equal to 27GJ/ton of Metals 9,213,750 tons of GHG Emissions Reduction Annually
Producing compounds, Pyrolysis Oils and Plastic Regeneration via Plastic and Polymers Recycling	4,600	2,000,000	2,300	290,000	90% Energy Saving equal to 9GJ/ton of Plastics 945,000 tons of GHG Emissions Reduction Annually
Producing Base Oil and Hydrocarbon Fuels by Catalytic, Hydro or Thermal Cracking of Petroleum and Petrochemical Residues in Recycling and Refining Petrochemicals and Waste Lubricating Oils	2,250	1,500,000	1,575	195,000	67% Energy Saving equal to 10GJ/ton of Petrochemicals Recycling of 1lit Lubricant Oil=Saving 53lit Crude Oil 787,500 tons of GHG Emissions Reduction Annually
Paper, Textile and Cellulose Recycling	1,650	1,500,000	990	125,000	28% Energy Saving equal to 7GJ/ton of Paper Recycling 1 ton of Paper=Saving 17 Trees 551,250 tons of GHG Emissions Reduction Annually
E-Wastes Dismantling, Non-Ferrous Metals and Aluminum Recycling	1,000	500,000	800	100,000	95% Energy Saving equal to 222GJ/ton of Metals 5,827,500 tons of GHG Emissions Reduction Annually
Glass Waste Recycling	725	500,000	580	75,000	26% Energy Saving equal to 6GJ/ton of Glass 157,500 tons of GHG Emissions Reduction Annually
Producing Rubber Powder, Rubberized Asphalt, Pyrolysis Oil and Tire Regeneration via Tire and Plastic Rubbers Recycling	1,050	300,000	525	65,000	45% Energy Saving equal to 44GJ/ton of Tire 693,000 tons of GHG Emissions Reduction Annually
Producing Bio-Fuel via Waste Cooking Oil Recycling	203	200,000	122	15,000	Recycling 1 lit of WCO=Saving 1.2lit of Diesel Fuel
Total Impact of Recycling	18,560	26,000,000	10,070	1,245,000	21 Million tons of GHG Emissions Reduction Annually



Should We Invest in Iran? But How?!

- ▶ The prospect is fascinating and Iran Waste Management Act is about to be improved in support of sustainable development, recycling and private investment.
- ▶ US sanctions are imposed on those companies who have either American shareholders, do the business with US, or use USD for their transactions. So there is no limitation between European investors or technology developers out of this criteria.
- ▶ Even for those who have cooperation with US, they can register stand-alone companies to cooperate with Iran, fully divided from their business with US.
- ▶ Above all, since Iran is at the starting line of waste management, investing in this country can be a golden opportunity for ambitious companies, technology developers and those who are going to make great financial achievements in a certain period of time!

Definitely YES!



Thinking Globally - Acting Locally

- ▶ At the first glance, renewable energies are more expensive than the fossil fuels. However, if we take hidden costs into account, they would become financially feasible, and as it could be for waste management and recycling.
- ▶ Starting an efficient waste management cycle can be a pricey process, which needs financially and legislatively supportive authorities, as well as responsible citizens.
- ▶ If we look at the daily diminish of fossil fuel reserves, alongside the massive costs and damages of environmental pollutions to the soil, water, air and the public health, recycling shows itself a necessity!
- ▶ Manifestly, recycling growth is a win-win situation for all of us, regardless of who we are and where we live.

**Environmental concerns
are everyone's business!**



An aerial photograph showing a dirt road that runs vertically through the center of the image. To the left of the road is a dense forest of dead, brown trees and branches. To the right is a dense forest of vibrant green trees. The text 'We have to choose which side we are going to stand on!' is overlaid in large, bold, green letters across the center of the image, spanning both sides of the road.

**We have to choose
which side we are
going to stand on!**

